
जोटर बॉल पेन रिफिल — विशिष्टि

(पहला पुनरीक्षण)

Jotter Ball Pen Refills — Specification

(First Revision)

ICS 87.080

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Printing Inks, Stationery and Allied Products Sectional Committee had been approved by the Chemical Division Council.

The standard was originally published in 1983. In this revision, reference clause, packing and marking clause have been incorporated in the standard.

This standard covers the requirements of essential materials, dimensions necessary for interchangeability and functional tests to ensure good writing quality and reasonable life.

IS 10559 is a necessary adjunct to this standard.

The composition of the committee responsible for formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***JOTTER BALL PEN REFILLS — SPECIFICATION***(First Revision)***1 SCOPE**

This standard covers the requirements of jotter ball pen refills made entirely from metal.

2 REFERENCES

The standards listed below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 1848 (Part 1) : 2018	Writing and printing papers — Specification: Part 1 Account book, azure lead, bond, cream laid and cream wove/printing white/printing coloured/printing offset, printing maplitho, printing white super calendered and typewriting types (<i>fifth revision</i>)
IS 4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (<i>first revision</i>)
IS 5805 : 1993	Ink, ball point pen refill — Specification (<i>first revision</i>)
IS 10559 : 1983	Specification for jotter ball point pens

3 MATERIALS

3.1 Tube (ink container) shall be made of brass or nickel-copper alloy or stainless steel.

3.1.1 When made of brass, tube (ink container) shall

be electroplated.

3.2 Writing tip shall be made from solid brass rod or nickel-copper alloy or stainless steel or any other non-corrosive material having same hardness characteristic or higher than that of brass.

3.3 Ball shall be made of stainless steel or tungsten carbide having hardness between 650 HV to 750 HV.

3.4 Back-plug shall be made of suitable plastics having sufficient resistance to mechanical abrasion.

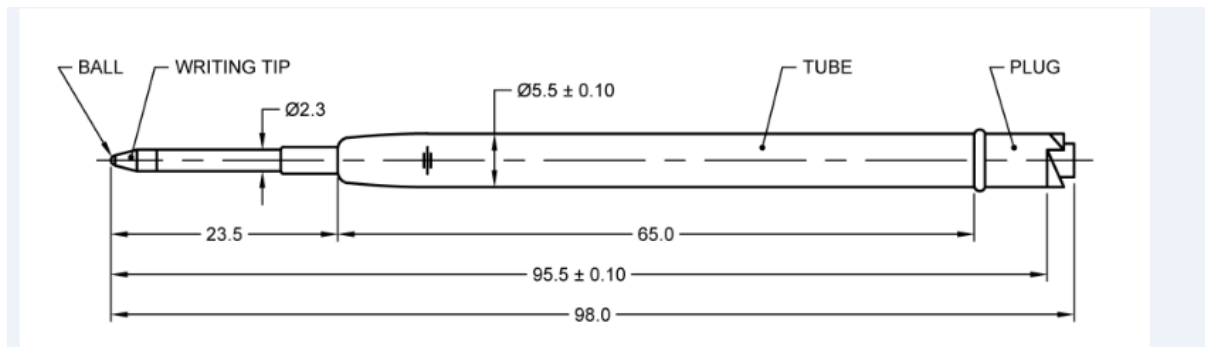
4 DIMENSIONS

4.1 Refills shall be made according to shape and dimensions as given in Fig. 1. The illustration is diagrammatic only and is not intended to give details of design. The ball shall be of 0.7 mm to 1.20 mm diameter as agreed to between the purchaser and the supplier.

5 REQUIREMENTS

5.1 The refills shall be so made as to be perfect in shape as shown in Fig. 1. They shall be straight and concentric with its ball.

5.2 The tube (ink container) shall be filled with ink conforming to IS 5805. Colour of the ink shall normally be black, blue, green, orange or red. The writing end of the tube is plugged with a ball-point tip and the other end with the back-plug. The ink shall not overflow the barrel or leak around the ball. The refill during disuse shall not ooze ink when held with ball point tip upward and downward and shall not result in smudginess or discontinuity in writing. The refill shall have sufficient ink-capacity so that it shall be able to write continuous line of 4 000 m min for refill having ball diameter 0.70 mm and 0.80 mm and 3 500 m for refill having ball diameter above 0.80 mm when tested for length of writing as specified in **6.3**.



All dimensions in millimetres

FIG. 1 REFILL, JOTTER BALL PEN

5.3 Sufficient quantity of silicon grease of suitable quality shall be applied at the top layer of the ink reservoir before the other end of the refill is sealed with the plug.

5.4 The tip, holding the ball, shall be worked over so that its edges shall be smooth and free from any feathers, fine, etc., that would scratch the paper while writing.

5.5 The colour of the back plug shall indicate the colour of the ink contained in the refill. The back plug shall plug the back end of refill properly and shall also be in perfect match with the actuating mechanism.

6 TESTS

6.1 Starting Test

The refill shall be made to draw a few lines or letters on a sheet of paper to ensure continuous writing. The refill shall then be kept in the vertical position with the writing tip up for 30 min. The refill shall now be tested on a white super calendered printing paper or cream laid or cream wove paper conforming to IS [1848 (Part 1)] by drawing a few lines, starting exactly from the margin, with normal writing pressure. The refill shall start marking the first line from a distance of not more than 15 mm and the subsequent lines shall start immediately from the margin where they are drawn.

6.2 Continuity Test

The refill shall be tested on a sheet of white super calendered printing paper or cream laid or cream wove paper conforming to IS [1848 (Part 1)] by writing numerous fast as well as slow letters, flourishes, ovals, reversals, angles, etc. The writing shall be such that it has complete continuity without

excess deposit of ink or variation in intensity or line getting split up.

6.2.1 After 48 h examine the sheet, the refill shall be considered to have satisfied the requirements of the test if there is no feathering or spreading or penetration to the reverse side of the paper.

6.3 Length of Writing

An unused pen shall be used for this test. A drum covered with white super calendered printing paper or cream laid or cream wove paper conforming to [IS 1848 (Part 1)] shall be rotated so that its peripheral speed is 150 mm/s and the writing tip of the pen shall be made to touch the paper with a uniform normal writing pressure of g perpendicular to the point of contact. The pen shall have a slow movement parallel to the axis of the drum so that the lines drawn on the paper are continuous but not overlapping. Continuity of writing shall be judged by visual observation and interruption of continuity due to any necessary adjustment in the mechanism or change of paper rolls shall be neglected. The pen be able to draw a continuous line of minimum length as specified in 5.2.

6.4 Smearing Test

After writing a few lines or letters on a sheet of white super calendered printing paper or cream laid or cream wove paper conforming to [IS 1848 (Part 1)] and waiting for 5 s, the writing shall be rubbed lightly with hand. The ink shall have been dried so that the writing could not be smeared.

6.5 Hardness Test

A sheet of paper shall be placed on a platform scale. The sample pen, with the refill propelled shall be held between 3.2 mm and 3.8 mm from the writing

end at an angle of 50° from the horizontal without the hand touching the paper. The force of 9 kg shall be applied gradually and uniformly within a period of approximately 5 s and immediately released. The tip shall then be examined under microscope and there shall not be any major deformation on the tip.

6.6 Corrosion Resistance Test

The metal parts of the refill shall be dipped in a boiling 10 percent (w/w) aqueous solution of sodium chloride for 15 min. After removal from this solution they shall be immersed in 10 percent (w/w) aqueous solution of sodium chloride at room temperature for 2 h. They shall then be removed, washed with clean water, wiped with a soft cloth and allowed to dry for 24 h at room temperature. The metal parts shall not show any visible signs of corrosion.

6.7 Accelerated Ageing Test

The refills shall be suspended point down and subjected successively to each of the following conditions:

<i>Sl No.</i>	<i>Exposure</i>	<i>Time (h)</i>	<i>Temp (°C)</i>	<i>Relative Humidity (Percentage)</i>
(1)	(2)	(3)	(4)	(5)
i)	I	168	60 °C ± 1 °C	85 - 90
ii)	II	48	2 °C	

At the end of the test the refill shall satisfy the continuity test given in 5.2 and the ink shall not have leaked nor its colour changed during or after the test.

6.8 Storage Test

The refills shall be kept under normal storage for not less than six months from the time of manufacture.

After this period they shall not have lost their writing characteristic and shall again satisfy the requirements of starting test (5.1) and continuity test (5.2).

7 SAMPLING

7.1 Sampling procedure and acceptance criteria for jotter ball pen refills shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Annex A.

8 PACKAGING AND MARKING

8.1 Packaging

The material shall be packed in closed containers as agreed to between the purchaser and the supplier.

8.2 Marking

The packages shall be securely closed and bear legibly and indelibly the following information:

- Name and grade of the material;
- Name of the manufacturer and his recognized trade mark, if any;
- Gross and net mass;
- Date of manufacture; and
- Batch number.

8.2.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

ANNEX A

(Clause 7.1)

SAMPLING SCHEME AND CRITERIA FOR CONFORMITY FOR JOTTER BALL PEN REFILLS

A-1 LOT

A-1.1 In any consignment, all the jotter ball pen refills manufactured under similar conditions, from the same raw material, shall be grouped together to constitute a lot.

A-2 SAMPLING

A-2.1 The number of refills to be selected at random from a lot shall depend upon the size of the lot and shall be in accordance with col (1) and (2) of Table 1.

Table 1 Sample Size and Criteria for Conformity
(Clause A-2.1)

Sl No.	Lot Size	For Test for Dimension (3.1) and for Requirements (4.1 to 4.4)		For Tests in 5.1 to 5.4	
		Sample Size	Acceptance Number	Sub-Sample Size	Acceptance Number
(1)	(2)	(3)	(4)	(5)	(6)
i)	up to 150	20	1	5	0
ii)	151 to 300	32	2	8	0
iii)	301 to 500	50	3	10	0
iv)	501 to 1 000	80	5	13	0
v)	1 001 to 3 000	125	7	15	1
vi)	3 001 to 10 000	200	10	20	1
vii)	10 001 and above	315	14	30	2

A-2.2 The refills in the sample shall be selected at random from the lot and in order to ensure the randomness of selection, IS 4905 may be used.

A-3 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-3.1 The refills selected according to **A-2.1** and **A-2.2** shall be inspected for dimensions (4.1) and requirements (5.1 to 5.5). The refill failing in any one or more of the requirements shall be considered as defective. The lot shall be considered as conforming to the requirements of the characteristics mentioned above, if the number of defective refills in the sample does not exceed the number given in col (3) of Table 1.

A-3.2 The lot having been found conforming to **A-3.1**, shall be tested for starting test (6.1), continuity test (6.2), length of writing (6.3), smearing test (6.4). For this purpose, a sub-sample of size given in col (4) of Table 1 shall be taken

from the refills selected as in **A-2.1** and **A-2.2**. Each of the refills in the sub-sample shall be subjected to the tests mentioned above. A refill failing in any one or more of the tests shall be considered as defective. The lot shall be considered as conforming to the requirements of the tests if the number of defectives in the sub-samples does not exceed the number given in col (5) of Table 1.

A-3.3 The lot having been found conforming to **A-3.2**, a sample of jotter refill shall be tested for hardness test (5.5), corrosion resistance test (6.6) and accelerated ageing test (6.7). The tests shall be considered as defective. A refill failing in any one of the lot shall be considered as conforming to the requirements of the tests if the sample passes both the tests.

A-3.4 The lot shall be accepted if **A-3.1**, **A-3.2** and **A-3.3** are satisfied, otherwise rejected.

ANNEX B
(Foreword)
COMMITTEE COMPOSITION

Printing Inks, Stationery and Allied Products Sectional Committee, CHD 14

<i>Organization</i>	<i>Representative(s)</i>
Govt Printing, Govt of West Bengal, Kolkata	SHRI SUBIR KUMAR MANDAL (Chairperson)
All India Federation of Master Printers, New Delhi	SHRI HARJINDER SINGH
All India Printing Ink Mfgs Association Ltd, Mumbai	SHRI RAVINDRA GANDHI SHRI R. SRIDHARAN (<i>Alternate</i>)
All India Print-Tech Professionals Forum, Kolkata	SHRI PARTHA PRATIM SANYAL
CONSUMER VOICE	SHRI M. A. U. KHAN SHRI K. C. CHAUDHARY (<i>Alternate</i>)
DIC India Limited, Noida	SHRI U. CHOWDHURI SHRI SAROJ PANDA (<i>Alternate</i>)
Directorate of Printing, New Delhi	SHRI D. K. JAIN SHRI K. K. PURI (<i>Alternate</i>)
Flint Group, Noida	SHRI SANJEEV BANSAL SHRI DINESH AHUJA (<i>Alternate</i>)
Government of Indian Stationery Office, Kolkata	SHRI BISHAMBER DHAR
Hubergroup India Pvt Ltd	SHRI RAJEEV SHARMA SHRI RAJEEV RANJAN (<i>Alternate</i>)
Indian Institute of Packaging	DR TANVEER ALAM SHRI SUBODH KAMALAKAR JUIKAR (<i>Alternate</i>)
Kokuyo Camlin Limited , Mumbai	SHRI MANIK J. SALUNKHE SHRIMATI SAYALI SURAJ SARFARE (<i>Alternate</i>)
Kumarappa Handmade Paper	DR SAAKSHY AGARWAL
National Archives of India, New Delhi	SHRI RAM SWAROOP DR SUTAPA CHAKRAVARTY (<i>Alternate</i>)
National Test House	SHRI BUDDH PRAKASH
Ordnance Factory Ambajhari	SHRI RAHUL KOMALKAR
Sakata Inx (India) Ltd, New Delhi	SHRI VIJAY SHANKAR GUPTA SHRI SUNIL K. CHHABRA (<i>Alternate</i>)
Security Printing and Minting Corpn India Ltd, Delhi (SPMCIL)	SHRI S. MAHAPATRA DR D. K. RATH (<i>Alternate</i>)
Shriram Institute for Industrial Research, Delhi	DR MANMOHAN KUMAR DR VINAY TYAGI (<i>Alternate</i>)

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SICPA India Ltd, New Delhi	SHRI ARUN VIG SHRI A. B. SACHAN (<i>Alternate</i>)
Siegwerk Inks, Bhiwadi	SHRI JATIN TAKKAR DR JOERG PETER LANGHAMMER (<i>Alternate</i>)
Times Group, New Delhi	SHRI SNEHASIS ROY SHRI ANUP KUMAR PAL (<i>Alternate</i>)
The Regional Institute of Printing Technology	SHRI SHANKHYA DEBNATH SHRI KRISHNENDU HALDER (<i>Alternate</i>)
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Western Printing Group, Survey of India, Delhi	SHRI EQUERAR AHMAD
Whale Stationery Products Ltd, Delhi	SHRI MUKESH GUPTA SHRI ASEEM GUPTA (<i>Alternate</i>)
Yansefu Inks and Coating Pvt Ltd	SHRI JITENDRA SHARMA SHRI NEELAKAMAL MOHAPATRA (<i>Alternate</i>)
BIS Directorate General	SHRI A. K. LAL, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (CHEMICAL) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI SAGAR SINGH
SCIENTIST 'D'/JOINT DIRECTOR
(CHEMICAL), BIS

Bureau of Indian Standards

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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